# Permit Fact Sheet

## General Information

| | | |
|---|---|---|
| Permit Number: | WI-0058904-05-0 | |
| Permittee Name: | CUSHING SANITARY DISTRICT #1 | |
| Address: | P O Box 457 | |
| City/State/Zip: | Cushing WI 54006 | |
| Discharge Location: | SWQ, Section 31, T36N-R18W, Cushing, Wisconsin | |
| Receiving Water: | The groundwater of the Wolf Creek Watershed within the St. Croix River Drainage Basin in Polk County | |
| Design Flow(s) | Annual Average | 0.0178 MGD |
| Significant Industrial Loading? | No | |
| Operator at Proper Grade? | Yes | |
| Approved Pretreatment Program? | N/A | |

## Facility Description

Cushing Sanitary District owns and operates a community wastewater treatment system. The plant designed to treat 17,780 gallons per day currently treats an average of 7,000 gallons per day (2014-2019 data). The system consists of a stabilization pond followed by a large storage pond. In the pond naturally occurring bacteria already in the wastewater treat the waste stream by breaking down the organic matter. Treated wastewater is stored through the winter in the pond and spray irrigated on an 18-acre field using 2 center pivot irrigation units. The field supports a cover crop which takes up nutrients and water. The water not used by the cover crop is further treated as it percolates through the soil eventually reaching groundwater. Groundwater impacts from the discharge are measured by 4 monitoring wells located around the perimeter of the spray irrigation system.

| **Sample Point Designation** | | |
|---|---|---|
| **Sample Point Number** | **Discharge Flow, Units, and Averaging Period** | **Sample Point Location, Waste Type/sample Contents and Treatment Description (as applicable)** |
| 701 | An average of 0.007 MGD (Nov. 2014 – Oct. 2019 data) | Representative samples shall be collected at the main lift station, located on 240th Street and Highway 87. |
| 001 | An average of 0.08 MGD during periods of discharge. An average of 44 days of discharge per year (mainly June-October) (Nov. 2014 – Oct. 2019 data) | Representative samples shall be taken from the effluent wet well in the spray irrigation pump station. Spray irrigation is prohibited during times of the year when the cover crop is not actively growing, unless approved in writing by the WDNR Basin Engineer. |
| 003 | Sludge has not been removed from the facility. | Representative samples shall be taken of the sludge in the stabilization and storage ponds by compositing a series of grab samples taken across the bottom of the ponds. Removal of sludge is not anticipated during this permit term. |

| Sample Point Designation For Groundwater Monitoring Systems | | |
|---|---|---|
| **Sample Pt Number** | **Well Name** | **Comments** |
| 801 | MW801 | Upgradient well located in a perched water table northwest of the spray irrigation fields. |
| 803 | MW 803 | Down gradient well west of spray field B, nested with well 807. |
| 805 | MW 805 | Side gradient and used as the background well, located east of spray field B. |
| 806 | MW 806 (4R) | Located mid-field between the spray fields and secondary/storage pond. |
| 807 | MW 807 (3R) | Down gradient well west of spray field B, nested with well 803. |

# Substantial Compliance Determination

| | Compliance? | Comments | |
|---|---|---|---|
| Discharge limits | Yes | Only 1 violation in this permit term. | |
| Sampling/testing requirements | Yes | | |
| Groundwater standards | Yes | GW forms were all submitted. See GW eval for more information. | |
| Reporting requirements | Yes | There were a lot of late submittals by the operator, but the problem has been fixed. | |
| Compliance schedules | Yes | All schedules were completed and met the requirements. | |
| Management plan | Yes | The checkbook irrigation tracking system has been used to schedule the spray irrigation. It has been effective and helpful to the operator. | |
| Operator at proper grade | Yes | Operator has this permit term to be certified in the SS subclass. | |
| Other | | Plant subclasses include:<br>A4- Ponds, Lagoons and Natural Systems;<br>SS- Sanitary Sewage Collection System | |
| Enforcement considerations | | | |
| In substantial compliance? | Yes | Reissue the Permit | |
| | Concurrence: Jordan J. Englebert, Wastewater Engineer | | Date: 10/2/2019 |

# 1 Influent - Proposed Monitoring

## Sample Point Number: 701- INFLUENT

| Monitoring Requirements and Limitations | | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Limit Type** | **Limit and Units** | **Sample Frequency** | **Sample Type** | **Notes** |
| Flow Rate | | MGD | Continuous | Continuous | |
| BOD5, Total | | mg/L | 2/Month | Grab | |
| Suspended Solids, Total | | mg/L | 2/Month | Grab | |
| Nitrogen, Total Kjeldahl | | mg/L | Monthly | Grab | |
| Nitrogen, Organic Total | | mg/L | Monthly | Calculated | Organic Nitrogen = Total Kjeldahl Nitrogen - Ammonia Nitrogen |
| Nitrogen, Ammonia (NH3-N) Total | | mg/L | Monthly | Grab | |

## Changes from Previous Permit & Explanation of Limits and Monitoring Requirements:

No changes from the previous permit. The parameters are standard monitoring requirements and frequency for minor municipal facilities with a biological treatment plant. Influent sampling requirements are found in NR 206.09 Wis. Adm. Code.

# 2 Land Treatment – Proposed Monitoring and Limitations

## Sample Point Number: 001- SPRAY IRRIGATION

| Monitoring Requirements and Limitations | | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Limit Type** | **Limit and Units** | **Sample Frequency** | **Sample Type** | **Notes** |
| Flow Rate | | MGD | Daily | Calculated | |
| Hydraulic Application Rate | Monthly Avg - LT | 10,000 gal/ac/day | Monthly | Calculated | |
| BOD5, Total | Monthly Avg | 50 mg/L | Weekly | Grab | |
| Suspended Solids, Total | | mg/L | Weekly | Grab | |
| pH Field | | su | Weekly | Grab | |
| Nitrogen, Total Kjeldahl | | mg/L | Monthly | Grab | |
| Nitrogen, Organic | | mg/L | Monthly | Calculated | Organic Nitrogen = Total |

| Monitoring Requirements and Limitations | | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Limit Type** | **Limit and Units** | **Sample Frequency** | **Sample Type** | **Notes** |
| Total | | | | | Kjeldahl Nitrogen - Ammonia Nitrogen |
| Nitrogen, Ammonia (NH3-N) Total | | mg/L | Monthly | Grab | |
| Nitrogen, Nitrite + Nitrate Total | | mg/L | Monthly | Grab | |
| Solids, Total Dissolved | | mg/L | Monthly | Grab | |
| Chloride | | mg/L | Monthly | Grab | |
| Nitrogen, Total | | mg/L | Monthly | Calculated | Total Nitrogen = Total Kjeldahl Nitrogen + (Nitrate+Nitrite)Nitrogen |

## Changes from Previous Permit & Explanation of Limits and Monitoring Requirements:

No changes from the previous permit. The required parameters and sampling frequency are in accordance with ch NR 206, Wis. Adm. Code (land treatment of municipal wastewater).

# 3 Groundwater – Proposed Monitoring and Limitations

## 3.1 Groundwater Monitoring System for Groundwater Monitoring System

**Location of Monitoring system:** Around the perimeter of the spray system

**Wells to be Monitored:** MW801, MW 803, MW 805, MW 806 (4R), MW 807 (3R)

**Well Used To Calculate PALs:** MW 805

**Enforcement Standard Wells:**

None, but MW 803 and MW 807 (3R) may be used to assess downgradient trends beyond the design management zone/ property boundary.

| **Parameter** | **Units** | **Preventative Action Limit** | **Enforcement Standard** | **Frequency** |
|---|---|---|---|---|
| Depth To Groundwater | feet | ***** | N/A | 1/ 6 Months |
| Groundwater Elevation | feet MSL | ***** | N/A | 1/ 6 Months |
| Nitrogen, Nitrite + Nitrate (as N) Dissolved | mg/L | 10 | 10 | 1/ 6 Months |
| Chloride Dissolved | mg/L | 125 | 250 | 1/ 6 Months |
| pH Lab | su | 8.0 | N/A | 1/ 6 Months |
| Nitrogen, Ammonia Dissolved | mg/L | 0.97 | 9.7 | 1/ 6 Months |

| | | | | |
|---|---|---|---|---|
| Nitrogen, Organic Dissolved | mg/L | 2.5 | N/A | 1/ 6 Months |
| Solids, Total Dissolved | mg/L | 590 | N/A | 1/ 6 Months |
| Nitrogen, Total | mg/L | 6.4 | N/A | 1/ 6 Months |

## Changes from Previous Permit & Explanation of Limits and Monitoring Requirements:

The monitoring frequency will continue to be twice a year, once in the Spring and again in the Fall. Monitoring of MW 801 is required to continue even though it measures a perched water table that is well above the groundwater being monitored in the other wells. It is used to assess agricultural impacts on the spray irrigation fields.

Groundwater limits and requirements are determined in accordance with ch NR 140 Wis. Adm. Code. Indicator parameter Preventative Action Limit (PAL) values are established per ch NR 140.20 Wis. Adm. Code. For more information please refer to the "Cushing Sanitary #1 - Groundwater Evaluation Report" dated May 3, 2019.

The PALs and Enforcement Standard (ES) limits will remain the same except for three parameters, Nitrite+Nitrate Nitrogen, pH, and Total Dissolved Solids.

| Parameter | Current Permit | | Proposed Permit | |
|---|---|---|---|---|
| | Preventive Action Limit | Enforcement Standard | Preventive Action Limit | Enforcement Standard |
| Nitrogen, Nitrite + Nitrate (as N) Dissolved | 2 mg/L | 10 mg/L | 10 mg/L | 10 mg/L |
| pH Lab | 5.2-7.2 s.u. | N/A | 5.8-7.8 s.u. | N/A |
| Solids, Total Dissolved | 476 mg/L | N/A | 584 mg/L | N/A |

**Nitrite+Nitrate** - An exemption (Alternate Concentration Limit (ACL)) to the published standard has been granted in accordance with ch NR 140.28 Wis. Adm. Code for Nitrite+Nitrate (10 mg/LPAL). The background concentrations found in monitoring well 805 exceeded the public health or welfare groundwater quality standards (PAL).

**Other parameters -** PAL values were recalculated and adjusted per ch NR 140.20 Wis. Adm. Code.

# 4 Land Application - Sludge/By-Product Solids (industrial only)

## Sample Point Number: 003- SLUDGE FROM PONDS

## Changes from Previous Permit:

Requirements for land application of municipal sludge are determined in accordance with ch. NR 204 Wis. Adm. Code. The code requires a minimum of one sample for listed metals during the permit term. Per NR 204.15 the facility requested and was granted a variance from this monitoring requirement. The request was supported by the following facts:

1) There are no categorical or significant industrial contributors within the sanitary district.
2) Sludge is not scheduled to be removed during the upcoming permit term.
3) Sludge has never been removed. The facility is managed in a manner so that sludge accumulation is minimal.
4) Sludge was sampled at the facility during 2012 and 2017. The results from all parameters are well below ceiling and high-quality limitations.
5) Monitoring for all appropriate parameters defined in NR 204 Wis. Adm. Code will be monitored in the unforeseen event that sludge removal is required during the permit term.

## Explanation of Limits and Monitoring Requirements

# 5 Schedules

## 5.1 Groundwater Monitoring Well Survey

| Required Action | Due Date |
|---|---|
| **Survey:** For each monitoring well, report the:<br><br>1. Top of casing elevation<br>2. Height of the top of casing<br>3. Ground surface elevation<br>4. Depth of monitoring well to + or - 0.01 feet | 04/01/2022 |

## Explanation of Schedules

Accurate well information is needed to ensure the requirements of NR 140 Wis. Adm. Code are met.

# Attachments:

Water Flow Schematic(s)

"Cushing Sanitary #1 - Groundwater Evaluation Report" dated May 3, 2019

# Proposed Expiration Date:

March 31, 2025

# Justification of Any Waivers from Permit Application Requirements

N/A – groundwater discharger

**Prepared By:**

**Sheri A. Snowbank Wastewater Specialist**

**Date:** December 5, 2019

cc: Jordan Englebert, Spooner